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## STUMP-UPROOTING CRANE FOR SOVIET S-80 TRACTOR

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Hitherto, the uprooting of tree stumps has been done in two ways: by direct action of the tractor and by dynamiting. The first method is damaging to the tractor's engine because of the excessive load frequently imposed upon it; the second, while more productive, is dangerous and expensive.

To solve the problem, the Moscow office of Stroymekhmontazh /Construction Machine Assembly / Trust has designed a special crane for the S-80 tractor, for uprooting and timber-skidding operations.

The crane's working parts are powered from the tractor's power take-off shaft. Uprooting takes place after the brake has been applied to the motor. The maximum effort to be exerted by the brake's drum is rated at 6 tons. A force of this magnitude, it is expected, will prevent skidding by the tractor on loose ground. Moreover, two special beams have been provided which anchor the tractor in loose ground.

The crane has a welded frame on which all the working units are mounted. Its front part is shaped like a closed box which serves as an oil bath for the cylindrical gear transmission.

The drive shaft consists of two parts. The front part goes into the housing of the tractor's rear axle through the bushing of the bracket and is coupled with the shaft of the first power take-off. The hind part of the shaft is mounted on roller bearings in the crane housing, and is coupled with the front part by means of double cardan joints. The rotary motion is relayed to the drums (a working drum and an auxiliary one), by two pairs of cylindrical gears with straight and bevel teeth, one pair of conical gears, and a clutch mechanism. The drums rotate at the rate of 42 revolutions per minute.

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Uprooting is performed, basically, by a rope, 16 millimeters in diameter, which is wound around the working drum. Another rope, 8 millimeters in diameter, which is wound around the auxiliary drum, is designed to open the automatic release catch and to pull over the working rope and hoisting tackle to the stumps which are to be pulled.

When uprooting is done at a distance of 8-10 meters from the crane, a guiding stump, which is in line with the drum's perpendicular axis, is chosen and the rope is caught around it before it is tied to the stump that is to be pulled. In pulling stumps that require 6-12 tons of traction power, a so-called anchoring stump is used, to which the end of the rope is fastened. Stumps requiring 12-30 tons of traction power are pulled by means of hoisting tackle, whose stationary block is fastened to the anchoring stump.

To uproot stumps which are located near the tractor, a special shortening attachment is employed, which may be fastened at any point of the basic rope, and which has a hook that catches the loop around the stump to be uprooted.

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An experimental model of the crane described was produced in 1950 at the Leningrad "Promet" Machine-Building Plant. In tests conducted at the plant, the crane showed satisfactory performance.

The specifications of the uprooting crane are as follows:

Servicing personnel:

Mechanics (tractor operators) 1
Workers 2

Traction power of rope of working drum (kg) 6,000

Traction power of rope of auxiliary drum (kg) 500

Required horsepower 60

Dimensions (mm):

Length 1,479 Width 1,590 Height 1,060

Weight of crane, minus rope and auxiliary equipment (kg) 1,250

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